

DESCRIPTION OF A NEW SPECIES OF CATOSTOMUS (CATOSTOMUS CYPHO)  
FROM THE COLORADO RIVER.

BY WM. N. LOCKINGTON.

*Catostomus cypho*, sp. nov.

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Head conical; snout long, much depressed; dorsal outline rising in a straight line to the occipital region, where commences a prominent and considerably elevated hump, which attains its greatest height at a distance from the occiput about equal to the length of the snout, and thence descends to the origin of the dorsal.

Along the base of the dorsal fin the dorsal outline descends rapidly to about the end of the second third of the total length of the fish; caudal peduncle extremely elongated, and widening considerably toward the caudal base.

Abdominal outline almost straight to the origin of the anal, thence diminishing to the caudal peduncle.

Greatest depth, at anterior pectoral axil, contained not quite  $4\frac{1}{4}$  times; head a little more than 4 times in the total length; snout a little more than  $2\frac{2}{3}$ , eye between 8 and 9 times in the length of the head; length of top of head not quite  $2\frac{1}{4}$  times in the distance (in a straight line) from the tip of the snout to the dorsal; inter-ocular width equal to the length of the snout; pectoral about  $1\frac{1}{3}$  in length of head; caudal peduncle about  $3\frac{2}{3}$  in the greatest depth.

Mouth rather wide, inferior. Lower lip small, in two distinct ovoid lobes, covered with low, flat-topped papillæ; the front of the dentary bones covered by a well-developed, round-edged, horny plate. Lower lip quite distinct from the upper; the skin of the cheeks forming an obliquely ascending crease, which does not, however, cover the angle of the mouth.

Anterior nostril horizontally sub-elliptical; posterior large, vertical, crescentic, entirely covered by its anterior flap.

Two distinct rows of pores on the top of the head; connected on the occiput with a series running behind and below the eye almost to the tip of the snout.

Pharyngeals arcuate, with numerous teeth, regularly diminishing posteriorly.

Opercular region well developed; the distance from the posterior margin of the eye to that of the operculum being, to the length of the snout, about as eleven to nine. Posterior margin of operculum and sub-operculum forming a continuous bold convex curve.

Pectorals triangular-lanceolate, fourth and fifth rays longest; their tips extending to beyond the middle of the pubic bones, rays once or twice bifurcate, the first two excepted.

Ventrals reaching beyond the vent, the third rays longest, the last about two-thirds as long; all the rays twice bifurcate except the first.

Dorsal well developed, fourth and fifth rays longest, and contained about  $1\frac{1}{3}$  times in the greatest depth; first three rays simple, the others twice bifurcate.

Anal considerably shorter than the dorsal, but equal in depth to the height of the latter; the first two rays simple, the others (except the last) twice or thrice bifurcate; first ray about half as long as the second.

Origin of the dorsal about one-sixth nearer to the tip of the snout than to the centre of the base of the caudal (measuring along the axis of the body), the base of its eighth ray above the anterior axil of the ventrals.

The tips of the anal rays reach beyond the first caudal accessories.

Caudal with numerous accessory rays, the longest about half as long as the outer simple principal ray; the other principal rays three times bifurcate; posterior margin of fin triangularly emarginate.

Scales cycloid, of variable size; each scale with 8-16 conspicuous radiating striæ on its exposed portion; the striæ and their interspaces crossed by numerous, much less distinct concentric striæ. Engaged portion of each scale with numerous diverging striæ, less distinct than those of the free portion. Scales along and near the lateral line larger than those above and below, and increasing considerably in size posteriorly, as do also those above and below, so that the largest scales of the body are upon the peduncle of the tail. The scales diminish much more rapidly in size downwards than upwards, so that those of the abdominal region and behind the pectoral base are by far the smallest. Scales somewhat pentagonal, the length exceeding the height; those upon the caudal peduncle almost twice as long as high.

Fins scaleless, as is also a small patch on the anterior part of the dorsal hump.

Lateral line deflected near its origin, then running along the median line of the body to the origin of the caudal. Pores simple.

Color of the preserved specimen silvery-gray above, light straw-color or creamy on the abdominal region and under side of the head; fins light uniform slaty-gray. The color is produced by numerous dark dots upon the scales and membrane between them, but fewer upon the scales, the outlines of which are therefore quite distinct.

The hump is supported anteriorly by a very large trapezoidal inter-neural, formed of a thick central pillar with anterior and posterior ala, the latter twice as large as the former. The upper margin of the bone is highest at the point of the central pillar, from which it slopes anteriorly and posteriorly. The base of the central pillar is broadly expanded transversely, offering a double articulating surface on its under side. The next inter-neural is a thin flat sub-rectangular plate, while the next three are expanded above, attenuated below; the fifth bent, and smaller than the fourth, the lower portion of which is also bent forward. Inter-neurals of dorsal fin with a central ray and an anterior and posterior expansion dying out at their lower fourth; symmetrical, except that supporting the first two rays. This is evidently formed by two inter-neural bones, united by a thin bony plate, which forms a broad expansion in front of the first, and a narrow one behind the second.

Upon the first vertebra there is a broad articulating surface, apparently for the reception of the first inter-neural, as a thin longitudinal perpendicular partition exactly fits into a notch between the two articulating surfaces of that bone. The transverse processes of this vertebra are broadly expanded inferiorly, and their lower edges suturally united to a pair of very large bony plates of complex form, connecting the air-bladder with the back of the skull.

From the anterior margin of each neurapophysis of the next nine vertebrae springs an upward-directed process, which, in the first of these vertebrae, is almost as long as the neural spine, but which diminishes in size on each successive vertebra.

The neural spines of the first two of these vertebrae are bifid.

The single specimen from which the above description is taken was brought from the Colorado River, at the junction of the Gila, and was sent to the museum of the California Academy of Sciences by John E. Curry, Esq., Civil Engineer.

It is said that the species is not uncommon in the locality from which this specimen was procured, and it is much to be regretted that we have only this example, especially since it is greatly damaged by the extraction of the large inter-neural some two years ago. The air-bladder is destroyed, so that it is impossible to tell whether it agrees with the other species of *Catostomus*, in having that organ divided into two portions. The extremities of the fins are also much broken, and the shape of the body distorted.

## DIMENSIONS.

	INCHES.
Total length, . . . . .	$11\frac{1}{4}$
Length to base of caudal, . . . . .	$8\frac{13}{16}$
Greatest depth, about . . . . .	$2\frac{5}{8}$
Length of head, . . . . .	$2\frac{3}{4}$
"    top of head, . . . . .	$2\frac{1}{4}$
"    snout, from eye, . . . . .	$1\frac{1}{16}$
Longitudinal diameter of eye, . . . . .	$\frac{5}{16}$
Inter-ocular width, . . . . .	$1\frac{1}{16}$
Depth of head, at front of eye, . . . . .	$1\frac{3}{32}$
Snout, from front of nostrils, . . . . .	$\frac{27}{32}$
Tip of snout to origin of dorsal, in a straight line, . . . . .	$4\frac{3}{4}$
Length of base of dorsal, . . . . .	$2\frac{3}{8}$
Height of longest dorsal ray, . . . . .	$1\frac{15}{16}$
Tip of snout to anterior portion of pectoral base, . . . . .	$2\frac{13}{16}$
Length of pectoral fin, . . . . .	$2\frac{1}{32}$
Tip of snout to anterior portion of ventrals, . . . . .	$5\frac{3}{16}$
Length of ventrals, . . . . .	$1\frac{5}{8}$
"    anal base, . . . . .	$\frac{7}{8}$
"    longest anal ray, . . . . .	$1\frac{15}{16}$
Tip of snout to origin of anal, . . . . .	$6\frac{3}{4}$
Width of caudal peduncle, . . . . .	$\frac{25}{32}$
Length of first inter-neural, . . . . .	$1\frac{5}{16}$
Height of "    "    . . . . .	$\frac{29}{32}$